

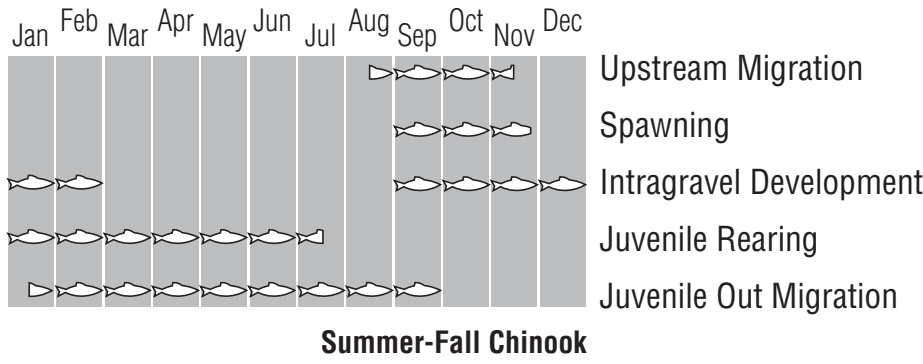
Chinook

Although there continue to be on average 6,000 chinook that spawn naturally in the Green River and its tributaries every year, this population is considerably smaller and may be less diverse than the ancient native chinook runs that once populated the river. The reasons are varied and complex, having to do with decline of habitat, reduced distribution of the fish across the watershed, and the cumulative effects of years of hatchery production and harvest.

The amount and quality of spawning and rearing habitat has declined steadily due to many changes made to the river and the watershed over the last 150 years (see right-hand column). The distribution of salmon was reduced markedly with the completion of the Tacoma Headworks dam in 1913, which cut off upstream access to the Upper Green River subwatershed. In addition, chinook produced at the Green River Hatchery on Soos Creek, although they were derived from the historic stock, probably have lost much of their natural diversity. These hatchery-produced fish have strayed and been out-planted into the Green River, mixing and mating with the native fish. This mixing is thought to subtly modify the structure of the wild population. Finally, years of harvest have selectively caught older, larger fish leaving progressively younger and smaller (and therefore less fertile) fish to spawn.

This mixed stock of wild and hatchery fish enters the river in the early fall, migrating to spawning areas in the mainstem Green River, its side channels, and larger tributaries, especially Newaukum and Soos Creeks. Despite the changes these fish have undergone, their annual return draws people to the streambanks as it has for centuries.

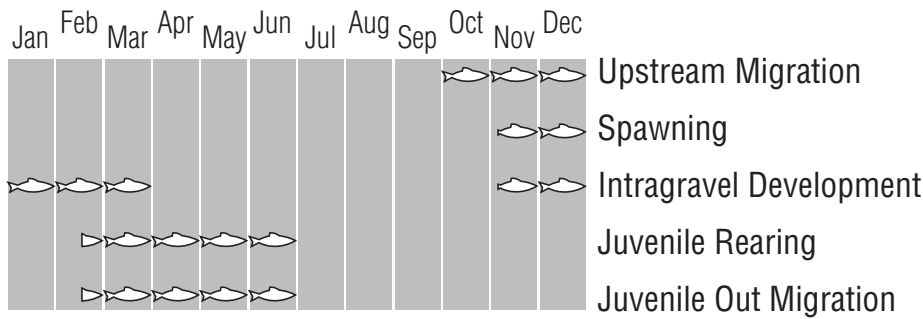
In 1999, Puget Sound chinook populations were listed as “threatened” under the Endangered Species Act.



Summer-Fall Chinook

Chum

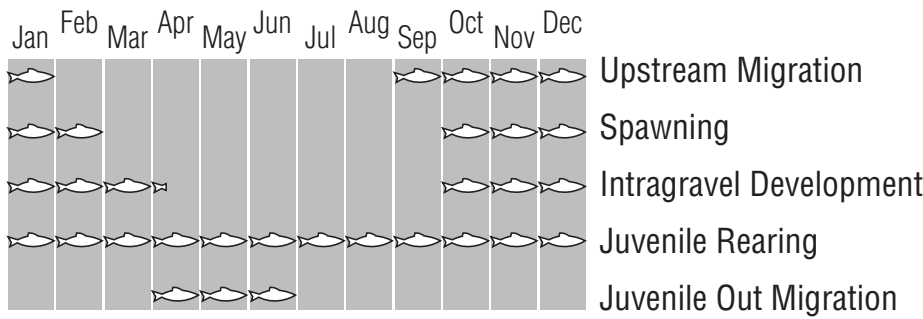
The native chum of the Green/Duwamish River historically spawned in the Middle Green mainstem, side channels, and a few of the major tributaries of the Lower Green River. Because many of these areas have been channelized, straightened, dredged, or filled during the development of the lower valley over the last 150 years, these native stocks have diminished dramatically and may already be gone. Most of the chum that remain in the watershed—numbering as many as 1,500 naturally spawning adults in some years—are produced in or are progeny of fish from the Keta Creek Hatchery on Crisp Creek. These chum are the descendants of fish introduced from other watersheds. While most of these adult chum return to the hatchery, some spawn naturally in the side channels of the Green River mainstem near Flaming Geyser Park and O’Grady Park and in Newaukum, Crisp, and Burns Creeks. Chum typically spawn in the Green River watershed in November and December.



Chum

Coho

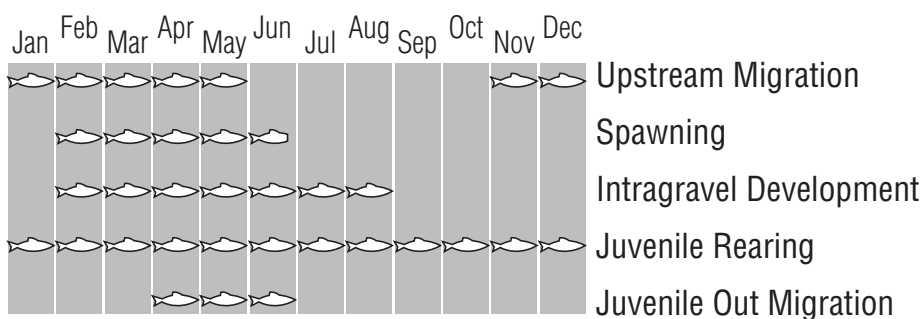
Like the chinook, the native coho in the Green/Duwamish River have been greatly affected by loss of habitat and hatchery fish produced in the Keta Creek and Green River Hatcheries. While as many as 12,500 coho returned annually to spawn in the river in the late 1960s, there have been fewer than 5,000 naturally spawning coho in the river during most years in the 1990s. Extremely low returns to Newaukum Creek have led the Washington State Department of Fish and Wildlife to describe the status of this stock as "depressed," indicating that the run size is low given the available habitat. So far, however, the coho populations have not declined to "critical" levels, where permanent damage to the stock is likely. Coho return to the river from September to December, spawning and rearing in tributary streams.



Coho

Steelhead

Winter steelhead are the "ancients" least affected by changes in the Green/Duwamish River watershed. Isolated by geography, run timing, and management, the winter steelhead are thought to maintain their wild, native characteristics. Between 1,000 and 2,500 of the wild winter steelhead enter the river from November through May and spawn in the upper mainstem of the Green River, Newaukum Creek, and nearby tributaries. In addition to the wild steelhead, there are both summer and winter steelhead stocks that are sustained by hatchery production. However, the high harvest rates and different spawning times of the hatchery-produced fish minimize competition and interbreeding with the wild fish.



Winter Steelhead

Ancients of the Green



Salmon, steelhead, and habitat

Today’s Green/Duwamish River salmon and steelhead return to a very different river than did their ancient ancestors. More than 150 years ago, salmon and steelhead passed through the braided, complex channels of the great Duwamish estuary at the mouth of the river. Multitudes of chinook and chum spawned in the mainstem and the many side channels of the Middle Green River, their furious activity sheltered by dense conifer forests. Others traveled far into the Upper Green River subwatershed above modern-day Howard Hanson Dam to spawn in the maintem and major tributaries. The river provided these ancestral salmon and steelhead abundant areas of cool water, clean gravels, and shaded pools necessary for spawning, rearing, adult migration, and refuge from natural disasters such as flood, fire, and drought.

While salmon and steelhead remain in the river, many of these habitats no longer exist:

- The Duwamish estuary has been filled and rechanneled, reducing the acreage of salmon habitat by 97%. The habitat that remains has suffered from decades of pollution, much of which lingers in river sediments today.
- The Lower Green River has been diverted, diked, and dredged—simplifying its many channels into one—and isolating fish from the river’s formerly productive floodplain.
- The Cedar River originally flowed into the Duwamish River but was re-routed into Lake Washington, depriving the Duwamish River of water and fish from that river.
- The White River was diverted south into the Puyallup River, reducing summer flows through the Lower Green River and lowering the floodplain.
- In the Middle Green River subwatershed, the native conifer forest has been harvested and replaced with deciduous trees, grass, and farm fields. Most side channels have been eliminated and others exist as mere remnants.
- Access by salmon to the Upper Green River subwatershed has been cut off by two dams.
- Across the watershed, land development has altered stormwater runoff, reduced streamside vegetation, and harmed water quality.

The result of these changes is a river that is much less hospitable to salmon and steelhead than the one that greeted the "ancients," a situation that is demonstrated by the decline in diversity and abundance of native chinook, chum, and coho stocks in the Green River.

Will today’s salmon and steelhead of the Green River fade into history? It is up to us to decide. Thankfully, many of the changes in the river and the watershed are reversible. Dozens of projects to restore the river have already been completed and many more are proposed. Side channels have been reconnected to the mainstem to increase available habitat. Levees have been set back from the river and planted with native trees to restore some of the fuctions provided by riparian vegetation. New off-channel intertidal habitat has been constructed in the Duwamish estuary to provide food and refuge for smolts. Major initiatives, such as creating access for salmon and steelhead above Howard Hanson Dam, are being explored. Hundreds of volunteers are working to protect, restore, and monitor the health of watershed streams large and small in their communities. And representatives of environmental and business groups, state and federal agencies, local cities, and King County are working together to better understand the needs of the fish across the watershed, develop plans to meet those needs, and marshal resources to protect and restore habitat.

But more needs to be done. People who share this watershed with salmon have the power to ensure the survival of these amazing creatures. Conserve water. Use yard care chemicals sparingly or not at all. Drive less. Volunteer to plant trees. Support government efforts to protect and restore salmon habitat.

The salmon and steelhead of the Green/Duwamish River are a legacy passed to this generation. Only through good stewardship of land and water by all who live, work, and play in our watershed can we guarantee that the heritage of the "ancients" will be passed to the next generation.

To learn more about local efforts to protect and restore salmon habitat for the "ancients of the Green" and get involved in these efforts, visit <http://dnr.metrokc.gov/Wrias/9/index.htm> or call (206) 296-1909.

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